



Hughes 9202

Quick Start User Guide

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Introduction

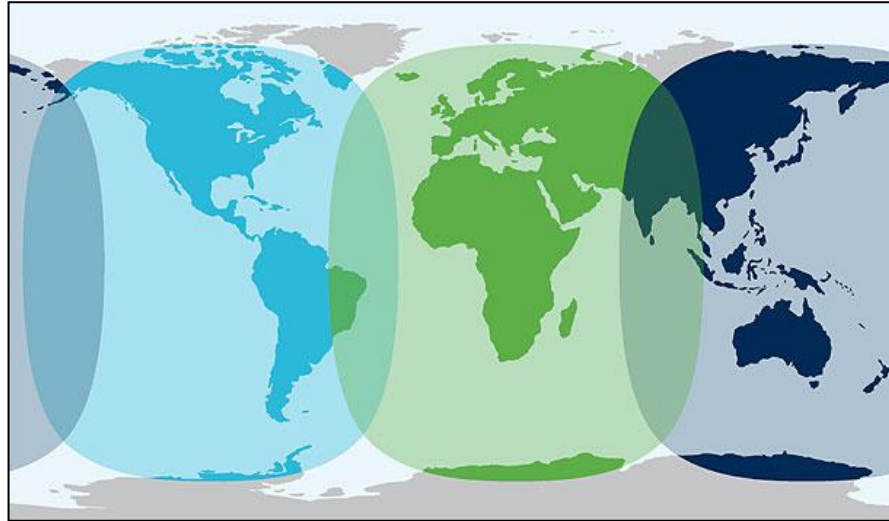
Overview

The Hughes 9202 Land Portable Terminal is the latest Hughes BGAN product to provide reliable satellite connectivity over the Inmarsat BGAN satellite network. The Hughes 9202 comes in a very small and portable package, and it allows the user to send and receive IP packets via Ethernet and WLAN interfaces. In parallel with the packet data services, the Hughes 9202 supports circuit switched voice and fax calls via standard POTS and ISDN interfaces.



Coverage Map

The Inmarsat BGAN service is operated with 3 satellites as shown below. The Hughes 9202 terminal will perform best in areas where the elevation (or “look”) angle is 20 degrees above horizontal or higher, but the terminal can operate down to 5 degrees of look angle.



About this Quick Start User Guide

This guide is the simplest and quickest way to connect to the BGAN network. If you are a first time user, you will be guided through the procedure for powering up your terminal, obtaining a GPS fix, connecting your computer to the terminal and registering with the BGAN network. You are then ready to start using voice and broadband services. For a complete user guide go to www.bgan.hughes.com and look for the Hughes 9202 tab.

Package Contents

When you unpack the Hughes 9202 Land Portable Terminal Kit package, you will find the following:

- Hughes 9202 terminal
- AC/DC power adapter
- Ethernet cable
- Lithium Ion battery
- Quick Start User Guide

Your Service Provider will supply you with a Subscriber Identification Module (SIM) and its PIN, and Satellite Terminal configuration instructions – you will need these to access the satellite network. Note: The SIM card may also have four (4) MSISDN numbers associated with it for various ISDN services:

- 4K Voice
- 3.1KHz Audio/Fax
- 64K UDI data
- 56K RDI data

Minimum System Requirements for Laptop/PC

These are the minimum computer system requirements for successful interface with the Satellite Terminal:

- Internet Browser: Microsoft Internet Explorer (IE7 or IE8), Mozilla or Safari.
- PC Support for Ethernet or WLAN (802.11b or b/g).
- 100 MB of free hard disk space if using LaunchPad. Only LaunchPad version 5.0.1 or newer supports the 9202.

Using the Hughes 9202

Before Getting Started

NOTICE

Install the battery in the terminal unit and then fully charge the battery using the supplied AC/DC converter before powering up the unit



Quick start

Install the USIM card supplied by your service provider in the battery compartment.

Power on the unit by pressing the power button for at least 2 seconds.

Since the Hughes 9202 terminal is a portable device, you must first obtain a GPS fix by laying the terminal flat with an open view of the sky.

GPS Icon



The GPS icon indicates the state of the GPS information in the terminal.

The icon **flashes** after power up until a fresh GPS fix is obtained.
The icon is **on steady** when the terminal has a new fix.

Satellite Icons



The satellite icons, located next to the GPS icon, indicate the **status of the GPS receiver** in the terminal and the **number of visible satellites**.

The icons are **off** when the **GPS receiver is off**.

The icons are **active** when the **GPS receiver is on**, either flashing or steady state. The number of icons in steady state indicates the number of GPS satellites in view. You will need all three on solid to acquire a new GPS fix. Note that once an adequate GPS fix is obtained, both the GPS receiver and all of the satellite icons are turned off and the word “GPS” should go on steady.

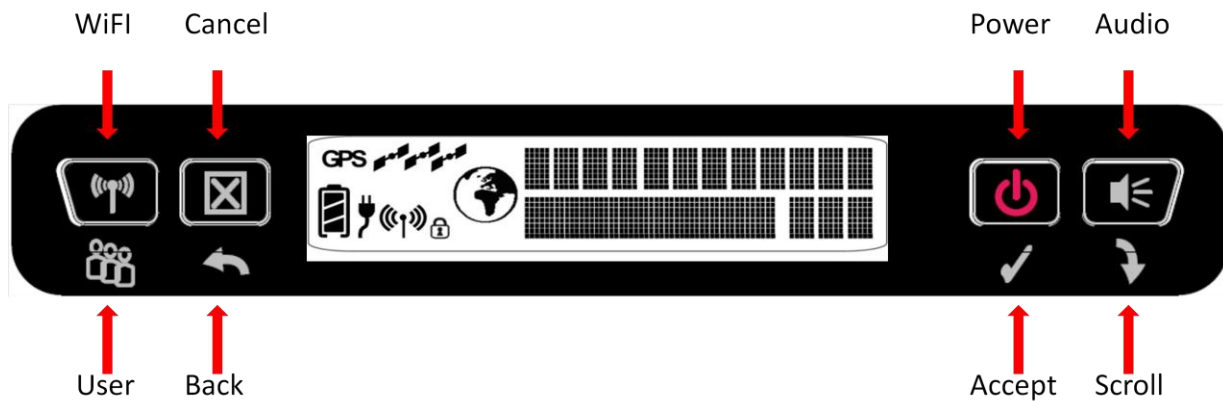


Figure 1: 9202 Front Panel showing buttons and functions

The top line gives the compass bearing and elevation angle of the closest satellite.



Use the signal quality bar and numeric display on the lower line to help point the UT to the satellite. While in pointing mode, you may also activate the audio pointing aid by a long press of the **Audio/Scroll** button on the right.

Once you have accurately pointed the unit to the satellite, exit pointing by a long press of the **Cancel/Back** button. The unit will now attempt to register with the satellite network.

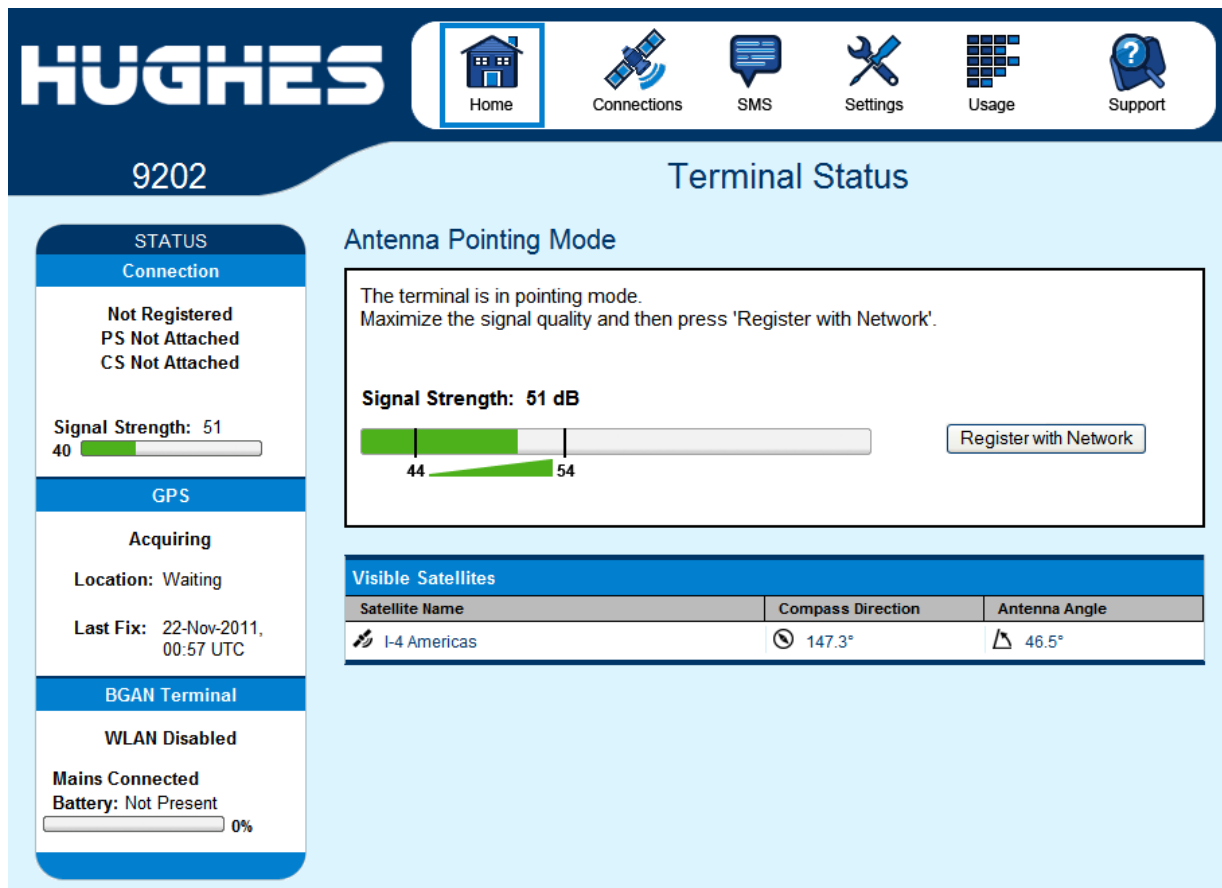
Once the unit has registered and is Circuit Switched (CS) and Packet Switched (PS) Attached, you can create a data connection from the LCD menu.



Web UI quick start

Alternatively, you can connect a computer and use the Hughes 9202's internal web server. From your terminal equipment (e.g. PC), enter 192.168.128.100 as the URL to access the Hughes 9202's home page. (See *Using the Web UI* starting on page 19 for more details.)

- The Terminal Status page gives you all the information you need to point and register with the network. Once you have a GPS fix and are pointed to the satellite as best you can, click on the **Register with Network** button to start the registration process.
- Once you are registered and CS and PS Attached, you can then select the Quality of Service (QoS) for your data connection by choosing either the **Standard** or **Streaming** connection.



Connecting the terminal to the computer

You can connect your computer to the 9202 with one or more of the following interfaces

- Ethernet
- WLAN (Wi-Fi)
- Integrated Services Digital Network (ISDN)

NOTICE

- During initial setup, the terminal can only be configured using an Ethernet connection. Once the terminal has been configured, all interfaces (Ethernet, WLAN and ISDN) can be used for data transfer depending on the service required.

Your computer must be configured to support your chosen connection method. Refer to the documentation supplied with your computer for details.

Connecting by Ethernet

To connect the Hughes 9202 terminal to a device using Ethernet:

- Connect a standard Ethernet cable to your device's Ethernet port, and insert the other end of the connector into the Ethernet port on the 9202.

Connecting by WLAN (Wi-Fi)

To enable the WLAN, long press (> 2 seconds) the **Wi-Fi** button on the front of the terminal.

- The default SSID is "Hughes 9202"
The default channel number is 11.

NOTICE

You cannot enable WEP encryption from the LCD. You must get into the webUI to configure encryption.

Connecting by ISDN

NOTICE

The terminal is set to Analog telephony by default, so in order to use ISDN you first have to enable it through the WebUI or the keypad.

To do this from the keypad, press the **Select** button until you see **Connection**. Press the **Scroll** button until you see **Configure**, then press the **Select** button to select **Configure**. Press the **Scroll** button until you see **Telephone**, then press the **Select** button. Press the **Scroll** button until you see **ISDN** and then press the **Select** button. ISDN should now stop blinking, indicating that it has been enabled. A reboot is required for the change to take effect.

Alternatively, you may also configure ISDN from the **Settings>Telephony** page of the Web UI.

Connect an ISDN cable to your computer's or phone's ISDN port, and insert the other end of the connector into the Terminal's ISDN port.

To dial, prefix an international number with 00 and terminate it with #. For example, to dial a number in the USA, enter: 0018005551234# (00 + Country code + phone number + #). For the UK dial 00442077281000#.

To receive incoming calls, you must configure your ISDN device with the MSN (Multiple Subscriber Number) of the service it supports. See the Telephony section of the user manual for more information on configuration of MSNs.

Connecting by RJ-11

NOTICE



The RJ-11 port is active by default, but if ISDN has been configured, you must switch it back to analog to use the RJ-14 port for analog telephony. You can do this from the keypad menu or the **Settings>Telephony** page of the Web UI.

NOTICE

You can connect an analog phone directly to the RJ-14 port with an RJ-11 cable to make voice calls.

If you wish to use the fax port you must connect an RJ-14 connector that breaks out the two RJ-11 ports into Line 1 and Line 2. You can then connect to port 2 to access the 3.1k service for fax (see Application Note at end of this Quick Start Guide).

To dial, prefix the international number with 00 and terminate with #. For example, to dial a number in the USA, enter: 0018005551234# (00 + Country code + phone number+ #)

NOTICE

RJ-11 and ISDN handsets cannot be used at the same time. You must configure the 9202 to either ISDN or analog telephony mode.

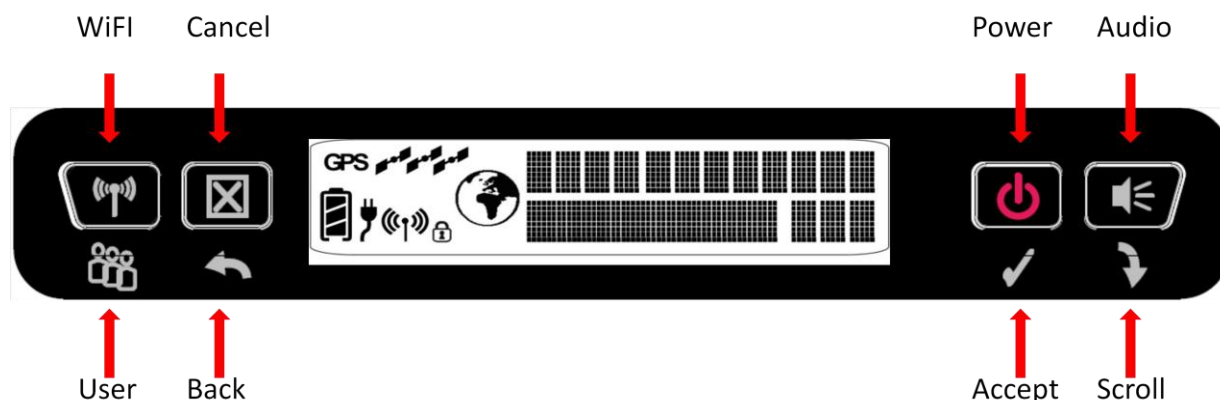
When switching between ISDN and analog telephony modes, the 9202 must be rebooted.

Using the LCD and Keypad

LCD Display and Keypad

The 9202 terminal has an LCD display that provides status information about the terminal. It has a four button keypad that allows you to control the operational features of the terminal without the need of a PC or a browser. It also includes control of an audible pointing aid integrated into the terminal.

The figure below shows the layout of the LCD and keypad.



Terminal Buttons

The UT provides four buttons for the user. Each button has two primary functions, one invoked with a short press and the other invoked with a long press. The top icon associated with a button is the long press function. The bottom icon associated with a button is the short press function.

Button Name	Short Press	Long Press
User / WiFi	Selects the user to display	Turns WiFi on/off
Back / Cancel	Up one level in menu	Exit pointing; Cancel to top menu
Accept / Power	Enters menu and confirms selection	Power on/off
Scroll / Audio	Scrolls through a menu or screen message	Audio on/off

A “**short press**” is any keystroke less than two seconds.

A “**long press**” is any keystroke that is two seconds or greater.

An “**extra long press**” of more than five seconds of the power button will cause a hardware enforced power down.

Menu Navigation

From the status display, a short press of the Accept button takes the display to menu mode and displays the first of a circular list of menu items. The menu structure is shown in **Figure 2** below.

Use the scroll button to scroll between options and the accept button to select options. A short press of the Back button takes the user up one level in the menu and a long press exits the menu system and returns to the status display

Connecting with the BGAN Network

Create a standard PDP Context

Once you have registered with the network you can set up a PDP (data) context right from the LCD panel. For example, to setup a Standard (background) PDP Context:

1. Press the **Power/Accept** button until you see *Connection*.
2. Press the **Power/Accept** button again to enter the Connection menu.
3. Press the **Audio/Scroll** button until you see *Standard*, then press the **Power/Accept** button to initiate the PDP context.



Menu Navigation

Level 1	Level 2	Level 3	Level 4	Comment
Connection	Standard			Starts display with the current setting
	32 Kbps			
	64 Kbps			
	128 Kbps			
	Disconnect			
Information	SMS	# New Msgs <i>or</i> No New Msgs		New message count
	GPS	{Latitude} <i>or</i> Blocked		13.32861° N format
		{Longitude} <i>or</i> Blocked		23.45833° E format
	IP Status	Global IP <i>or</i> Disconnected	{IP Address}	Shows global IP address for the selected TE
		APN	{APN string}	Displays info about the UT
		Gateway Addr	{192.168.128.100}	
	ISDN	Voice	{MSN 1}	
		3.1KHz	{MSN 2}	
		UDI	{MSN 3}	
		RDI	{MSN 3}	
	Terminal	Version	{Software version}	
		IMEI	{IMEI}	
		IMSI	{IMSI}	
Configure	Pointing	Enabled		Starts display with the current setting
		Bypass		
	Backlight	30 seconds		Controls backlight setting. Starts display with the current setting.
		120 seconds		
		On		
		Off		
	Telephone	Analog		Starts display with the current setting
		ISDN		
	WiFi	Enabled		Starts display with the current setting
		Disabled		
	LCD	Level 1/5		Adjusts LCD contrast immediately to displayed level. Starts with current level. Accept button confirms.
		Level 2/5		
		Level 3/5		
		Level 4/5		
		Level 5/5		
Send Text	Emergency			Sends predefined SMS with GPS fix lat/long. Displays "Sending SMS" and "SMS Sent" when complete. You must configure the default destination for these messages from the SMS Settings web page.
	Need Help			
	All OK			
	Need Pickup			
	Running Late			

Figure 2: Keypad Menu Structure

Display Icons

Battery Icon



The battery icon displays the estimated life of the battery while under battery power. The battery icon also displays the charging state while under external power.

Three segments: 75% to full

Two segments: 50% to 74%

One segment: 25% to 49%

Zero segments: 10% to 24%

Zero segments, flashing: 0% to 9%

If the icon is off, no battery has been detected.

Power Icon



The power icon displays the state of the **external power input**.

On if external power is connected.

Off if external power is disconnected.

GPS Icon



The GPS icon indicates the state of the GPS information in the terminal.

The icon **flashes** after power up until a fresh GPS fix is obtained.

The icon is **on steady** when the terminal has a new fix.

Satellite Icons



The satellite icons, located next to the GPS icon, indicate the **status of the GPS receiver** in the terminal and the **number of visible satellites**.

The icons are **off** when the **GPS receiver is off**.

The icons are **active** when the **GPS receiver is on**, either flashing or steady state. The number of icons in steady state indicates the number of GPS satellites in view. You will need all three on solid to acquire a new GPS fix. Note that once an adequate GPS fix is obtained, both the GPS receiver and all of the satellite icons are turned off and the word “GPS” should go on steady.

Wireless LAN Icon



The wireless LAN icon displays the state of the WLAN feature.

Off if **Wireless LAN** operation is **turned off**.

On if **Wireless LAN** is **on**.

Wireless LAN Lock Icon



The lock icon displays the **state of encryption** for the WLAN feature. It is **displayed only if the Wireless LAN is on and WLAN encryption is turned on**.

Globe ICON



The globe icon displays the circuit switched attach status of the terminal.

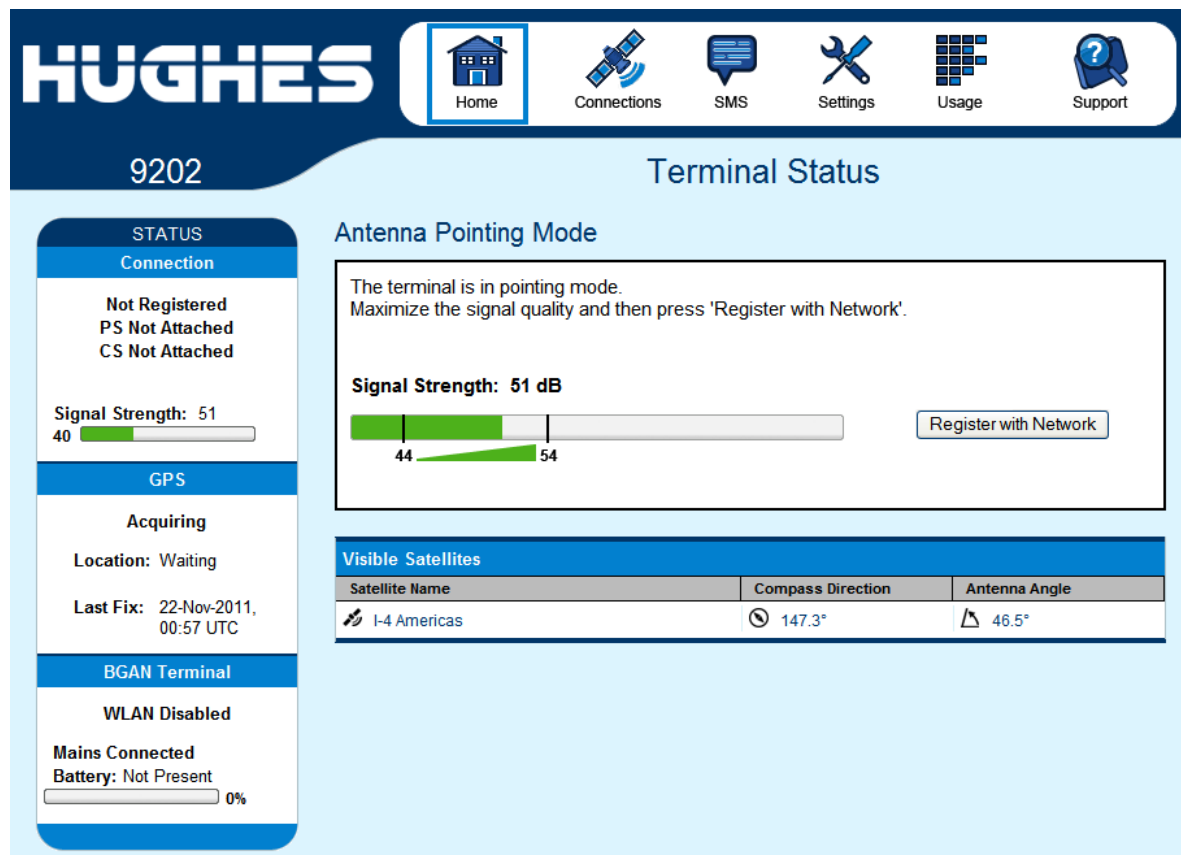
Off if **not CS attached** to the network: no circuit switched calls possible.

On if **CS attached**: ready for calls.

Using the Web UI

Accessing the Web UI

The Hughes 9202 UT includes its own internal Web User Interface (Web UI). To access the Web UI, open your favorite Web Browser and type in the internal IP address of the UT e.g. **http://192.168.128.100**. The Web UI opens up to the **Home** or **Terminal Status** page as shown below:



Once you have pointed the terminal, press the “Register With Network” button. Once the terminal registers, the page will change and you can control connections for the terminal.

Support Page

This web page allows you to display technical and support information about the terminal and retrieve logs.

HUGHES

 Home

 Connections

 SMS

 Settings

 Usage

 Support

9202

Support and Information

STATUS

Connection

**Registered**
PS Attached
CS Attached

Beam: REGIONAL 13
Signal Strength: 56
40 

GPS

**3D GPS Fix**

Location: 32.89575° N
117.20220° W
Last Fix: 29-Feb-2012,
23:59 UTC

BGAN Terminal

WLAN Disabled

Mains Connected
Battery: Not Present
 0%

Terminal Information

Model	BGAN USER TERMINAL, Hughes 9202, Ver 1
Class	2
IMEI	004401-64-001026-6
Software Version	0.0.0.26

SIM Information

IMSI	901112112102500
APN	bgan.inmarsat.com
Subscriber Phone Number	Not configured by Service Provider.

Terminal Support

Website	support.inmarsat.com/mmi1.aspx
Telephone	+442077281653
E-mail	bgantest1@inmarsat.com

Troubleshooting

Terminal Logs

Log Type	Current Log	Archived Log	Reset Log
To download the logs to disk, Click or right-click the links below and select 'Save Target As'.			
System Log	Download Current		
Event Log	Download Current	Download Archive	<button>Reset Event Log</button>
Packet Log	Download Current	Download Archive	<button>Reset Packet Log</button>
Circuit Log	Download Current	Download Archive	<button>Reset Circuit Log</button>

Reset Terminal to Factory Defaults

Click this button to restore all terminal settings to their original default values.

Restore to Defaults

Reboot Terminal

Click this button to reboot the terminal software.

Reboot Terminal

Troubleshooting

Problem	Possible Cause	Possible Solution
Terminal will not turn on	Battery not connected properly Battery not charged	Check battery is correctly installed Connect AC/DC converter to charge the battery
Cannot get SIM card to lock into position	SIM is not correctly oriented for insertion	Ensure the SIM is pressed firmly into the SIM slot Ensure the SIM is oriented as shown in the Error! Reference source not found. section
The BGAN LaunchPad or web UI will not connect to the terminal	No interface connection between the terminal and computer Your computer is configured with a static IP address in the wrong subnet.	Ensure there is a WLAN or Ethernet connection between the terminal and computer, see page 11 . Check the IP configuration settings on your computer. Enable DHCP or use a static IP address in the same subnet as the UT local IP address. Default UT IP address is: 192.168.128.100
Terminal will not accept incoming ISDN calls	The MSN programmed into the ISDN device does not match the MSN programmed into the terminal	Ensure the appropriate MSN is programmed into the ISDN device. Ensure the appropriate MSN is programmed into the terminal; see the “Telephony” section of the User Manual.

Problem	Possible Cause	Possible Solution
ISDN device connected to terminal will not ring on incoming calls	The calling party is using the main MS-ISDN phone number to call the ISDN device. Device may need the 3.1KHz audio or the UDI MS-ISDN number for the device to ring	Make sure that the calling party is using the correct MS-ISDN number for the particular device. There are 4 MS-ISDN phone numbers for each SIM card. Examples below: 870772420035 Speech 870782104036 3.1KHz 870782104065 UDI 870782104074 RDI
ISDN device will not power up	Terminal is set to Analog by default	Use the keypad or the webUI to enable the ISDN port
Terminal will not make outgoing ISDN calls	Terminal is not Registered with the Network.	Check the Status area (left bar) on most Web UI pages or the globe icon on the LCD to ensure the unit is CS attached.
ISDN device does not operate correctly	The ISDN device is trying to draw too much power from the satellite terminal's ISDN interface The device you are connecting is not an ISDN device. It might be an Ethernet device that you are accidentally connecting to the ISDN port. Terminal is not configured for ISDN	Only connect an ISDN device that draws less than 70mA of current at 40V (equivalent power 2.8W) Make sure you connect only ISDN devices to the ISDN port Check the configuration on the Telephony Settings Page
Terminal is connected to the BGAN network, but cannot obtain the requested Quality of Service	Network temporarily not available User tried to set up a 256 Kbps streaming connection.	Retry again. If problem persists, contact your service provider. The Inmarsat Network only supports 256K for Class 1 terminals and 128K is the max for a Class 2 terminal

Problem	Possible Cause	Possible Solution
Terminal does not obtain a GPS fix	Terminal's location limits visibility of 3 or more GPS satellites.	Move the terminal to a location where there are few obstructions such as trees or tall buildings, so that as much as possible of the sky is visible. Point the antenna towards the most open area of sky (normally straight up)
None of the above solutions resolve the problem	Terminal may have a hardware or software fault, and needs to be re-booted.	Remove power. Wait 30 seconds. Reconnect the DC power and turn on the terminal.

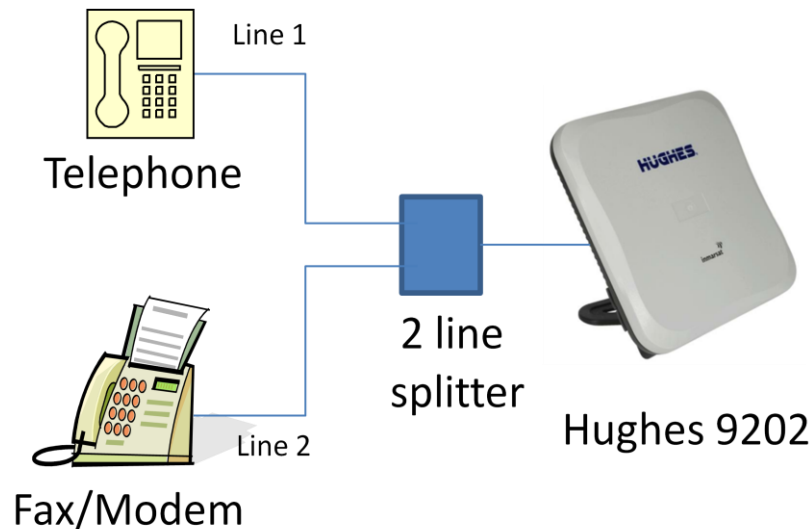
Technical Specifications

Satellite TX Frequency	1626.5 – 1660.5 MHz and 1668 – 1675 MHz
Satellite RX Frequency	1518 – 1559 MHz
GPS Frequency	1574.42 – 1576.42 MHz
Continuous transmit on 128Kbps stream	3 hours and 15 minutes
Continuous receive 128Kbps stream	5 hours and 30 minutes
Standby Time	Up to 36 hours ^{note 1}
Weight	1.4Kg
Dimensions	216 mm x 216 mm x 45 mm
Operating Temperature (with battery)	-5°C to +55°C
Operating Temperature (with DC supply)	-25°C to +60°C
Battery Charging Temperature	0°C to +40°C
Storage Temperature (including battery)	-20°C to +60°C
Storage Temperature (excluding battery)	-25°C to +80°C
Humidity	95% RH at +40°C
Wind	Operational wind loading (with stand secured to ground) 40kph (25mph)
Water and Dust	IP 55 Compliant
Non-operational Mechanical Vibration	200-2000Hz, 0.3 m ² /s ³ MIL-SPEC 810B Method 500.3, Procedure 1
Input Voltage	19V  3.4A ^{note 2}
Battery	7.2V 2.5Ah Li-Ion, rechargeable
Data Connectivity	RJ45 port (Ethernet 10BaseT) RJ14 port (POTS) RJ45 port (ISDN) 802.11b WLAN
Other Features	LCD based User Interface (keypad) Web User Interface (WebUI) SIM/USIM Slot (behind battery) AC/DC adapter Rechargeable Li-Ion battery ¼ inch UNC threaded hole for tripod mounting Compass to assist pointing

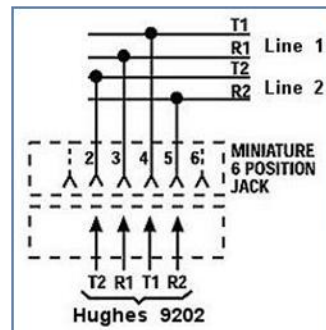
Note:

1. Performance may be affected by a wide range of factors.
2. The Hughes 9202 broadband satellite terminal operates on DC power which can be supplied by an AC or DC power source. To comply with safety requirements, the terminal must be powered with only an AC/DC adapter or DC power adapter supplied or approved by Hughes.

Application Note – Phone/Fax



1. The Hughes 9202 RJ14 port allows the connection of both a telephone and a fax or modem at the same time (BGAN circuit switched network restrictions mandate that only one is in use at any given time).
2. The Hughes 9202 supports two distinct phone numbers, one for the voice line and the other for the fax or modem line. Incoming phone calls will only ring the line associated with that phone number.
3. Automatic outgoing and incoming BGAN bearer selection means that no special configuration or switching between voice and fax/modem is needed by the user (4kbps voice for phone, 3.1KHz clear channel for fax/modem).
4. A two line splitter is required for this application – see next page for sample splitters. However, the customer can readily create their own splitter wiring using commonly available telephony hardware. The 9202 port is wired per the standard RJ14 wiring convention (FCC 47 CFR Part 68 § 68.502).
5. No splitter is needed for voice only operation.



Hughes suggests one of the following splitters for applications requiring both voice and fax/modem. No splitter is needed when accessing the Hughes 9202 RJ11 connector for voice services only.

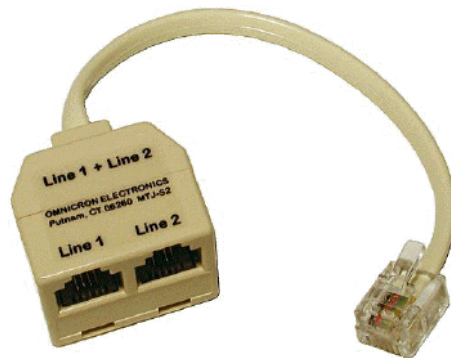
Two line splitter from Calradstore

<http://www.calradstore.com/70-489.html>



Omnicon Electronics MTJ-S2

<http://www.omnicronelectronics.com/digital/mtj-s2.htm>



Radio Shack 2-Line 4-conductor Splitter/Adapter

<http://www.radioshack.com/product/index.jsp?productId=3900035>

